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Control

Application No. PCT/SE99/01541

through said fluid conduit, and a second optical sensor for detecting said radiated light which is reflected by said fluid conduit.

15. (NEW) The apparatus of claim 14 in combination with a control device.

16. (NEW) The apparatus of claim 15 wherein said control device comprises a device for the extracorporeal treatment of blood.

17. (NEW) The apparatus of claim 14 wherein said second optical sensor is integrally formed with said light source.

18. (NEW) The apparatus of claim 14 including a housing, and wherein said light source, said first optical sensor and said second optical sensor are disposed in said housing.

19. (NEW) The apparatus of claim 18 in combination with a control device.

20. (NEW) The apparatus of claim 19 wherein said housing constitutes a portion of said control device.

21. (NEW) The apparatus of claim 14 including a first waveguide for transmitting said radiated light from said light source to said predetermined location and for transmitting said radiated light reflected by said conduit to said second optical sensor, and a second waveguide for transmitting said radiated light which passes through said fluid conduit to said first optical sensor.

22. (NEW) The apparatus of claim 21 in combination with a control device.

23. (NEW) The apparatus of claim 22 including a housing, and wherein said light source, said first optical sensor, and said second optical sensor are disposed in said housing, and including a fluid conduit holder for holding said fluid conduit at said predetermined location, said fluid conduit holder disposed on said housing, said first and second waveguides being integrated with said fluid conduit holder.

24. (NEW) The apparatus of claim 22 wherein said first waveguide is disposed at a location adjacent to said fluid conduit whereby an air gap is created therebetween.

25. (NEW) The apparatus of claim 14 wherein said light source generates said radiated light having a predetermined wavelength and a predetermined modulation.

26. (NEW) The apparatus of claim 25 wherein said predetermined wavelength comprises a wavelength in the range of infrared radiation, and wherein said predetermined modulation comprising a substantially square pulse sequence.

27. (NEW) The apparatus of claim 15 wherein said control device includes a control unit, and wherein said first and second optical sensors are electrically connected to said control unit, said first optical sensor providing a first signal and said second optical sensor providing a second signal.

28. (NEW) The apparatus of claim 27 wherein said control device includes comparing means for comparing said first and second signals with predetermined signal values, whereby when said first signal is at a predetermined high level and said second signal is at a predetermined low level, said comparing means determines that said fluid conduit is not present at said predetermined location, when said first signal is at a predetermined medium level and said second signal is at a predetermined high level, said comparing means determines that said fluid conduit is present at said predetermined location and said fluid is not present in said fluid conduit, when said first signal is at a predetermined high level and said second signal is at a predetermined high level, said comparing means determines that said fluid conduit is present at said predetermined location and said fluid comprises a transparent fluid, when said first signal is at a predetermined low level and said second signal is at a predetermined high level, said comparing means determines that said fluid conduit is present at said predetermined location and said fluid comprises an opaque fluid, when said first signal is at a predetermined low level and pulses at a predetermined high level, and said second signal is at a predetermined high

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level, said comparing means determines that said fluid conduit is present at said predetermined location and said fluid comprises an opaque fluid containing air bubbles, and when said first signal is at a predetermined low or medium level and said second signal is at a predetermined low level, said comparing means determines that an error condition exists.

29. (NEW) The apparatus of claim 15 wherein said control device comprises a dialysis monitor.

30. (NEW) A method for determining the presence of a fluid conduit at a predetermined location and at least one characteristic of said contents of said fluid conduit, said method comprising directing radiated light towards said predetermined location whereby when said fluid conduit is present at said predetermined location said radiated light passes in a direction through said conduit, detecting a first portion of said radiated light passing through said fluid conduit and detecting a second portion of said radiated light which is reflected by said fluid conduit.

31. (NEW) The method of claim 30 including comparing said first and second portions of said radiated light with predetermined values therefor whereby when said first portion of said radiated light is at a predetermined high level and said second portion of said radiated light is at a predetermined low level, determining that said fluid conduit is not present at said predetermined location, when said first portion of said radiated light is at a predetermined medium level and said second portion of said radiated light is at a predetermined high level, determining that said fluid conduit is present at said predetermined location and said fluid is not present in said fluid conduit, when said first portion of said radiated light is at a predetermined high level and said second portion of said radiated light is at a predetermined high level, determining that said fluid conduit is present at said predetermined location and said fluid comprises a transparent fluid, when said first portion of said radiated light is at a predetermined low level and said second portion of said radiated light is at a predetermined high

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level, determining that said fluid conduit is present at said predetermined location and said fluid comprises an opaque fluid, when said first portion of said radiated light is at a predetermined low level and pulses at a predetermined high level, and said second portion of said radiated light is at a predetermined high level, determining that said fluid conduit is present at said predetermined location and said fluid comprises an opaque fluid including air bubbles, and when said first portion of said radiated light is at a predetermined low or medium level and said second portion of said radiated light is at a predetermined low level, determining that an error condition exists.

REMARKS

The above-noted cancellation of claims 1-13, and addition of new claims 14-31, as well as the submission of a new Abstract and revisions to the Specification, are respectfully submitted prior to initiation of the prosecution of this application in the U.S. Patent and Trademark Office.

The above-noted new claims are respectfully submitted in order to more clearly and appropriately claim the subject matter which applicant considers to constitute his inventive contribution. No new matter is included in these amendments. In addition, the revisions to the Abstract and Specification are submitted in order to clarify and correct the Abstract and Specification and to conform them to all of the requirements of U.S. practice. No new matter is included in these amendments.

In view of the above, it is respectfully requested that these amendments now be entered, and that prosecution on the merits of this application now be initiated. If, however, for any reason the Examiner does not believe such action can be taken, it is respectfully requested that he telephone applicant's attorney at (908) 654-5000 in order to overcome any objections which he may have.